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Description of the males of *Euprosthenops australis* Simon, 1898 and *Euprosthenopsis pulchella* (Pocock, 1902) (Araneae: Pisauridae)

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The spider family Pisauridae, with 333 described species (Platnick 2014), can be considered as a moderately diverse spider family. Together with the worldwide distribution, its members exhibit an exceptionally wide range of foraging and prey capture behavior, from web-based hunters, water surface hunters to ambush hunters in the vegetation (Silva & Sierwald 2013).

Among the African Pisauridae, members of the genera *Euprosthenops* Pocock, 1897 and *Euprosthenopsis* Blandin, 1974, forage on sheet webs (Figs 1, 2), the former moving upside down under the sheet web (Fig. 1), while the latter run on top of the sheet (Fig. 2). In his revisions of African Pisauridae, Blandin (1974) examined the general eye patterns and the structures of male and female genitalia of all the species then assigned to the genus *Euprosthenops*. He identified two species groups; species closely related to the type species, *Euprostenops bayaonianus* (Brito Capello, 1867), to remain in the genus, and he proposed a new genus *Euprosthenopsis* Blandin, 1974 for the remaining species, which are all close to *Euprosthenopsis armata* (Strand, 1913). Blandin (1974: 946) also proposed the synonymy of the genus *Euprosthenomma* Roewer, 1955 with *Euprosthenops*.

The spider genus *Euprosthenops* was revised by Blandin (1976) and currently the genus comprises nine known species (Platnick 2014).

Blandin (1977) also revised the genus *Euprosthenopsis*, which currently comprises seven species, all endemic to the African continent.

In this work, the males of *Euprosthenops australis* Simon, 1898 and *Euprosthenopsis pulchella* (Pocock, 1902), both from South Africa, are described for the first time. New diagnoses for each genus are provided. Distribution maps for both species are also presented.

The material examined is deposited in the following institutions (curators in parenthesis): **AMNH**, American Museum of Natural History, New York, USA (N. I. Platnick), **BMNH**, The Natural History Museum, London, United Kingdom (J. Beccaloni), **FMNH**, Field Museum of Natural History, Chicago, Illinois, USA (P. Sierwald), **NCA**, The National Collection of Arachnida, ARC-Plant Protection Research Institute, Pretoria, South Africa (A. Dippenaar-Schoeman), **MNHN**, Muséum National d'Histoire Naturelle, Paris, France (C. Rollard) and **MRAC**, Musée Royal Del'Afrique Central, Tervuren, Belgium (R. Jocqué).

The nomenclature of the male palpus follows Sierwald (1990) and Blandin (1974, 1976, 1977). Specimens were examined using a LEICA MZ 7.5 stereomicroscope equipped with a camera lucida. For scanning electron microscopy (SEM), structures were excised, air-dried and mounted on stubs with double-sided adhesive copper tape. Specimens were sputter-coated with gold and examined using a ZEISS EVO 60 electron microscope. Photographs were made using a LEICA DFC 450 camera, model MSV 266 and edited using the program Adobe Photoshop. All measurements are in millimeters. Abbreviations related to eye measurements: OQA = width of ocular quadrangle anteriorly or width of anterior median eyes, OQP = width of ocular quadrangle posteriorly or width of posterior median eyes, OQH = height of ocular quadrangle or height of anterior median eye and posterior median eye, PLE = diameter of posterior lateral eye, PME = diameter of posterior median eye, ALE = diameter of anterior lateral eye, AME = diameter of anterior median eye, PLE-PME = interdistance between posterior lateral eye and posterior median eye, PME-PME = interdistance between posterior median eyes, ALE-AME = interdistance between anterior lateral eye and anterior median eye, AME-AME = interdistances between anterior median eyes.

Taxonomy

Pisauridae Simon 1890

Euprosthenops Pocock, 1897

Figs 1, 3–22

Euprostenomma Roewer 1955a: 148, synonymised by Blandin, 1974: 946.

Euprostenops; Platnick 2014.

Type species. *Euprostenops schenkeli* Roewer, 1955, designated by Blandin, 1974: 946.

Diagnosis. The representatives of *Euprostenops* Pocock, 1897 resemble those of *Euprostenopsis* Blandin, 1974 in the following characters: foraging in webs (Fig. 1), anterior eye row extremely procurved (all eyes forming almost three rows) (Figs 5, 6) and anterior lateral eyes on strongly projected tubercles (Figs 5, 6). The two genera can be differentiated by the spider's position in the web; *Euprostenops* moves under the web (Fig. 1) and *Euprostenopsis* moves on the surface of the sheet web (Fig. 2). The male palpus of *Euprostenops* possesses a large and wide distal tegular apophysis (DTA) (Figs 9–15) and a finger-like retrolateral tibial apophysis (RTA) (Figs 10, 12, 13, 17), males of *Euprostenopsis* have a short and rounded distal tegular apophysis (DTA, Figs 27, 32) and a wide and concave retrolateral tibial apophysis (RTA, Figs 28, 34). Females of *Euprostenops* resemble those of *Euprostenopsis* by the presence of conspicuous lateral lobes (LL) and by the scape-like projection of the middle field (MF) (Blandin 1974: 938, figs 4A, B). They can be distinguished from *Euprostenopsis* by the short spermathecae and by the very large and flattened copulatory ducts (CD) (Blandin 1974: 939, fig. 5A).

Distribution. Africa (Fig. 22).

Euprostenops australis Simon, 1898

Figs 1, 3–17, 22

Podophthalma bayoniana Karsch 1878: 326, plate 2, fig. 8 (female, misidentified).

Euprostenops australis Simon 1898: 12, female from South Africa, Hebron (MNHN 17418) (not examined); Lawrence 1947: 33, fig. 18; Roewer 1955b: 144, fig. 62; Blandin 1976: 70, figs 6–7, 14, 19, 22; Blandin 1978: 26, fig. 6c.

Note. Males and females were found together in several sites from South Africa (NCA collection) – see Material Examined.

Diagnosis. The males of *Euprostenops australis* resemble those of *E. bayonianus* and *E. proximus* by the presence of a large, flattened distal tegular apophysis (DTA), and its hook-like, curved tip (Figs 9, 14, 18, 20), by the membranous median apophysis (MA, Figs 9, 14, 18, 20) and by the finger-like retrolateral tibial apophysis (RTA, Figs 10, 17, 19, 21). *Euprostenops australis* males can be distinguished from all other members of the genus by the slender and elongated distal tegular projection (DTP, Figs 9, 15) and by the rounded prolateral projection (arrow) on the distal tegular apophysis (DTA, Figs 9, 15).

Description. Male (South Africa, KwaZulu-Natal, NCA 2008/4093). Total length 19.42. Carapace 6.47 long, 5.97 wide, light brown with two wide lateral whitish bands (Figs 3, 4). Clypeus light brown, 0.81 high (Fig. 6). Anterior eye row extremely procurved, 2.34 wide (Fig. 6); posterior eye row strongly recurved, 2.14 wide (Fig. 6). Eye diameters, interdistances, and median ocular quadrangle: AME 0.27, ALE 0.36, PME 0.40, PLE 0.39; AME-AME 0.23, AME-ALE 1.17, PME-PME 0.31, PME-PLE 0.50, OQA 0.74, OQP 1.05, OQH 0.98. Chelicerae light brown with white bristles (Fig. 6). Retromargin of left cheliceral fang furrow with three teeth, equidistant and equal in size; promargin with three teeth, median tooth largest. Sternum light brown, bristly; 3.04 long, 3.12 wide (Figs 7, 8). Labium dark brown, light brown distally, 0.93 long, 1.01 wide (Fig. 8). Legs light brown, relative length: IV-I-II-III, I – femur 14.44/ tibia-patella 19.75/ metatarsus 13.29/ tarsus 6.14/ total 53.62; II – 14.27/ 17.43/ 14.60/ 5.97/ 52.27; III – 11.78/ 13.28/ 10.95/ 4.15/ 40.16; IV – 14.94/ 18.77/ 16.60/ 6.14/ 56.45. Ventral pairs of macrosetae on tibiae: I-4; II-4; III-3; IV-4. Abdomen 11.67 long, light brown with a dark brown band at the anterior portion (Fig. 3). Venter light brown with a thin dark brown median band (Fig. 7). Palpus with an elongated bulbus (Figs 9, 12, 14, 15). Cymbium 4.15 long (Figs 9–11). Distal tegular apophysis (DTA) with a rounded prolateral projection (arrow) (Figs 9, 12, 14, 15). Median apophysis (MA) short and membranous (Figs 9, 12, 14, 15). Elongated and translucent conductor (Figs 9, 12, 14, 15). Retrolateral tibial apophysis elongated, finger-like and with a rounded apex (Figs 10, 13, 16, 17).



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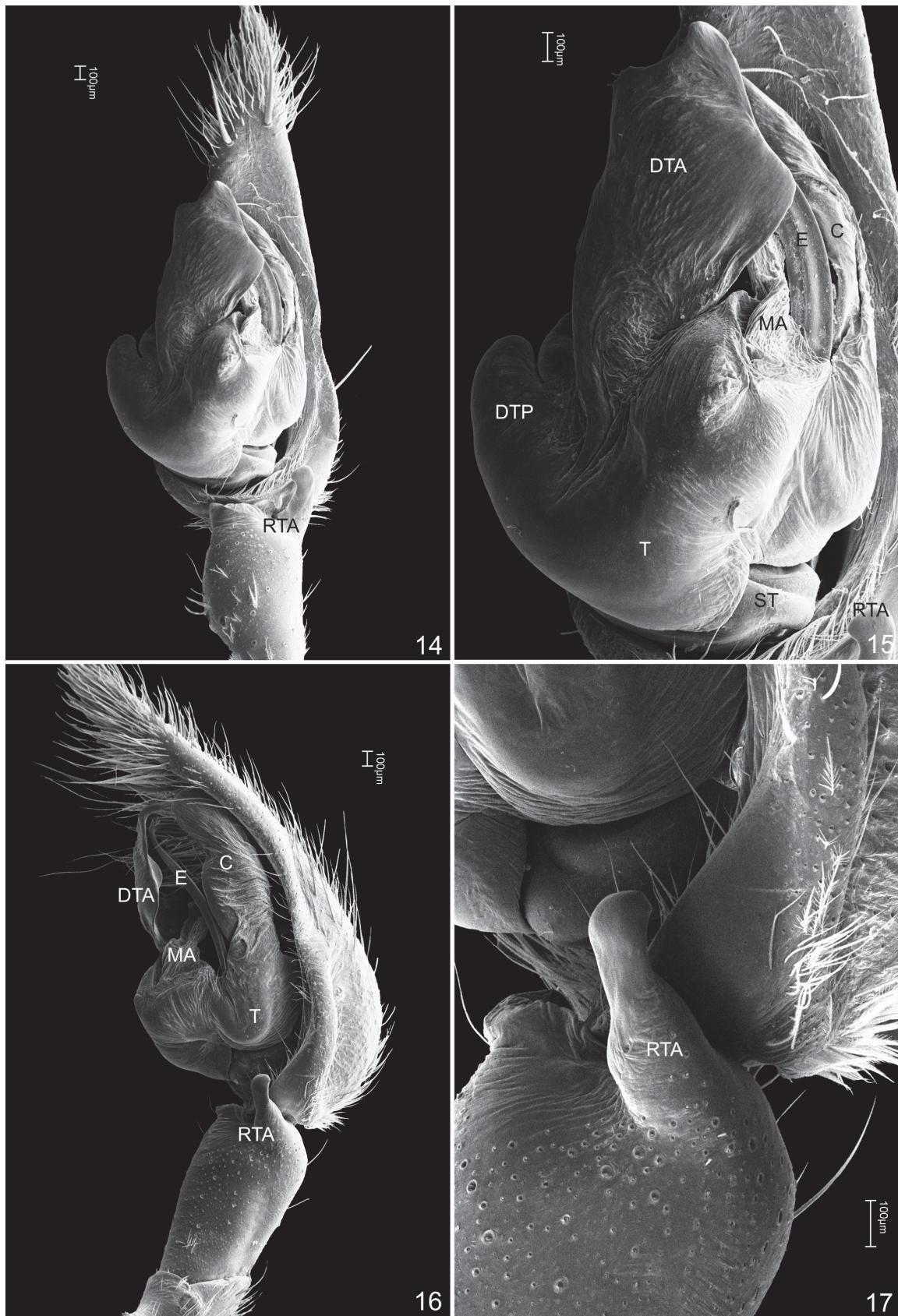
FIGURES 1, 2. *Euprosthenops australis* Simon, 1898. 1 female from South Africa (Photo: Wilhelmina Gertruida Steyn). *Euprosthenopsis pulchella* (Pocock, 1902). 2 female from South Africa (Photo: Sean Allen).



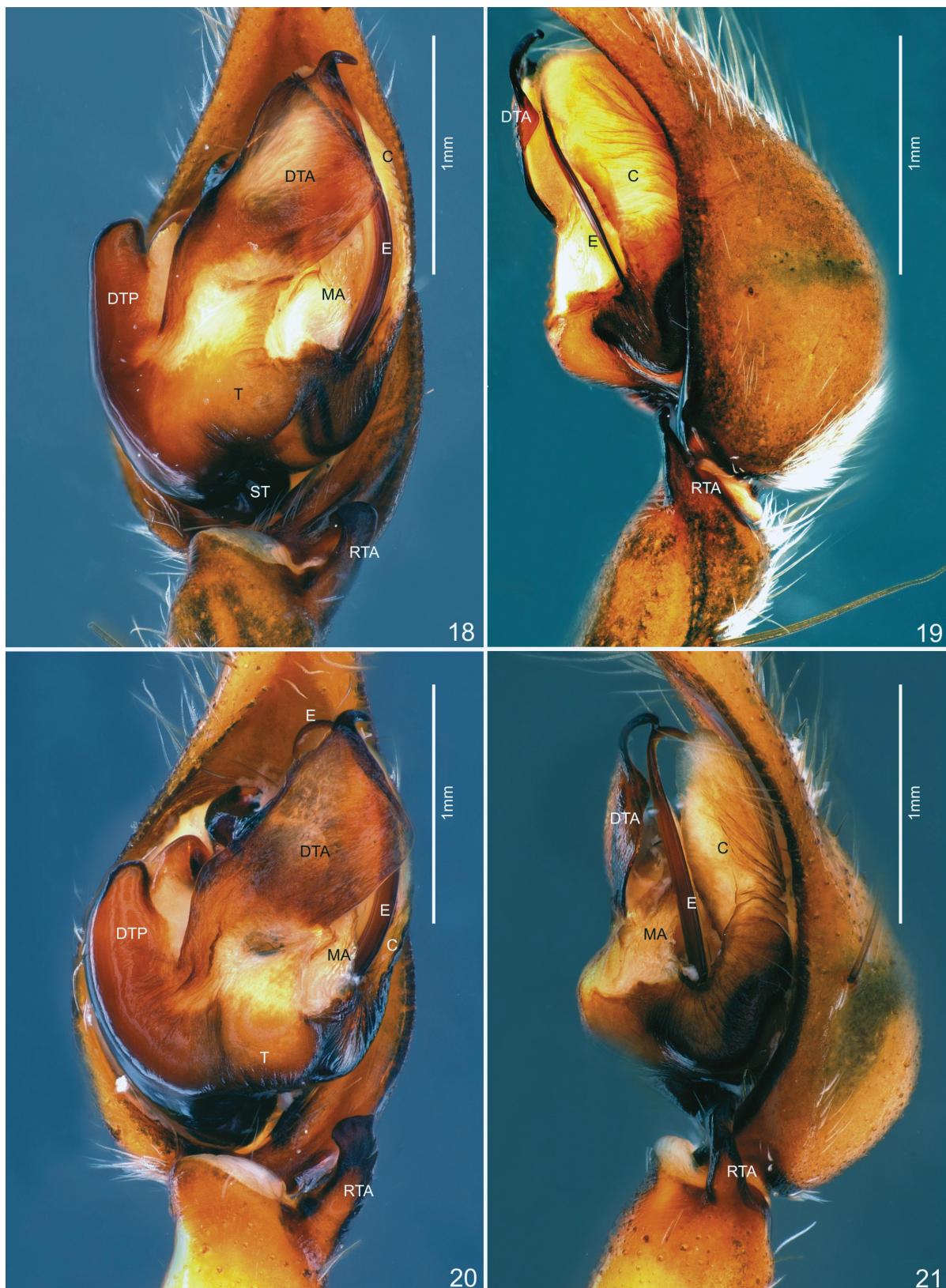
FIGURES 3–8. *Euprosthenops australis* Simon, 1898 (NCA 2008/4093). 3–8 male habitus (3 dorsal, 4 detail of carapace, 5 detail of ocular region, 6 frontal, 7 ventral, 8 detail of sternum and labium).



FIGURES 9–13. *Euprosthenops australis* Simon, 1898 (NCA 2008/4093). 9–13 male palpus (9 ventral, 10 retrolateral, 11 prolateral, 12 expanded, ventral, 13 expanded retrolateral). (C = conductor, DTA = distal tegular apophysis, DTP = distal tegular projection, E = embolus, MA = median apophysis, PP = pars pendulla, RTA = retrolateral tibial apophysis, ST = subtegulum, T = tegulum). Arrow indicates the prolateral projection on the distal tegular apophysis (DTA).



FIGURES 14–17. *Euprosthenops australis* Simon, 1898 (NCA 2009/3854). 14–17 male palpus (14 ventral, 15 detail of bulbous, 16 retrolateral, 17 detail of retrolateral tibial apophysis). (C = conductor, DTA = distal tegular apophysis, DTP = distal tegular projection, E = embolus, MA = median apophysis, RTA = retrolateral tibial apophysis, ST = subtegulum, T = tegulum).



FIGURES 18–21. *Euprosthenops* spp. 18, 19 *Euprosthenops bayaonianus* (Brito Capello, 1867) (male paratype, MRAC 136.439), male palpus (18 ventral, 19 retrolateral). 20, 21 *Euprosthenops proximus* Lessert, 1916 (male paratype, MRAC 145.393), male palpus (20 ventral, 21 retrolateral). (C = conductor, DTA = distal tegular apophysis, DTP = distal tegular projection, E = embolus, MA = median apophysis, RTA = retrolateral tibial apophysis, ST = subtegulum, T = tegulum).

Female. Redescribed by Blandin, 1978: 26, fig. 6c.

Other material examined. SOUTH AFRICA, *Natal (KwaZulu-Natal)*: Ophathe Game Reserve [28°22'S, 31°23'E], elevation 560m, 1 ♂, 28.IX.2008, C. Haddad (NCA 2008/4093); *Hartbeespoort*: Grootplaas De Rust [25°46'S, 27°50'E], 2 ♂, 1 ♀, 20.XII.2013, H. Davel (FMNH); *Western Cape*: Hell's Gate [28°00'S, 32°28'E], 5 ♂, 18.X.2004, J. Esterhuizen (NCA 2009/3854); *Pongola*: Farm Vergeval, district Ngotsche [27°21'S, 31°36'E], 1 ♀, 23.X.1967, J. V. Vuuren (NCA 85/32); *Mpumalanga*: Nelspruit [25°20'S, 31°46'E], 1 ♀, 15.x.1979, N. Lotz (NCA 2000/272); *Gauteng*: Hammanskraal [25°24'S, 28°16'E], 1 ♀, 25.X.1975, L. Harley (NCA 76/1548). ZAMBIA, *Serenje*: Kasanka National Park, Lake Waka Waka [12°33'S, 30°13'E], 1 ♀, 11.XI.2000, C. Stuart & T. Stuart (NCA 2002/556); *Choma*: Choma Wildlife Game Farm [17°14'S, 26°53'E], 1 ♀, 03.XII.2006, C. Haddad (NCA 2007/501). NIGERIA, Central Province, 1 ♀, 1968, E. B. Gwong (MRAC 135.966). SENEGAL, Dakar Peninsula, 1 ♀, I-IV.1945, E. H. Newcomb (AMNH).

Distribution. South Africa (Natal, Pongola, Gauteng, Mpumalanga), Zambia (Choma, Serenje), Nigeria (Central Province) and Senegal (Dakar) (Fig. 22).

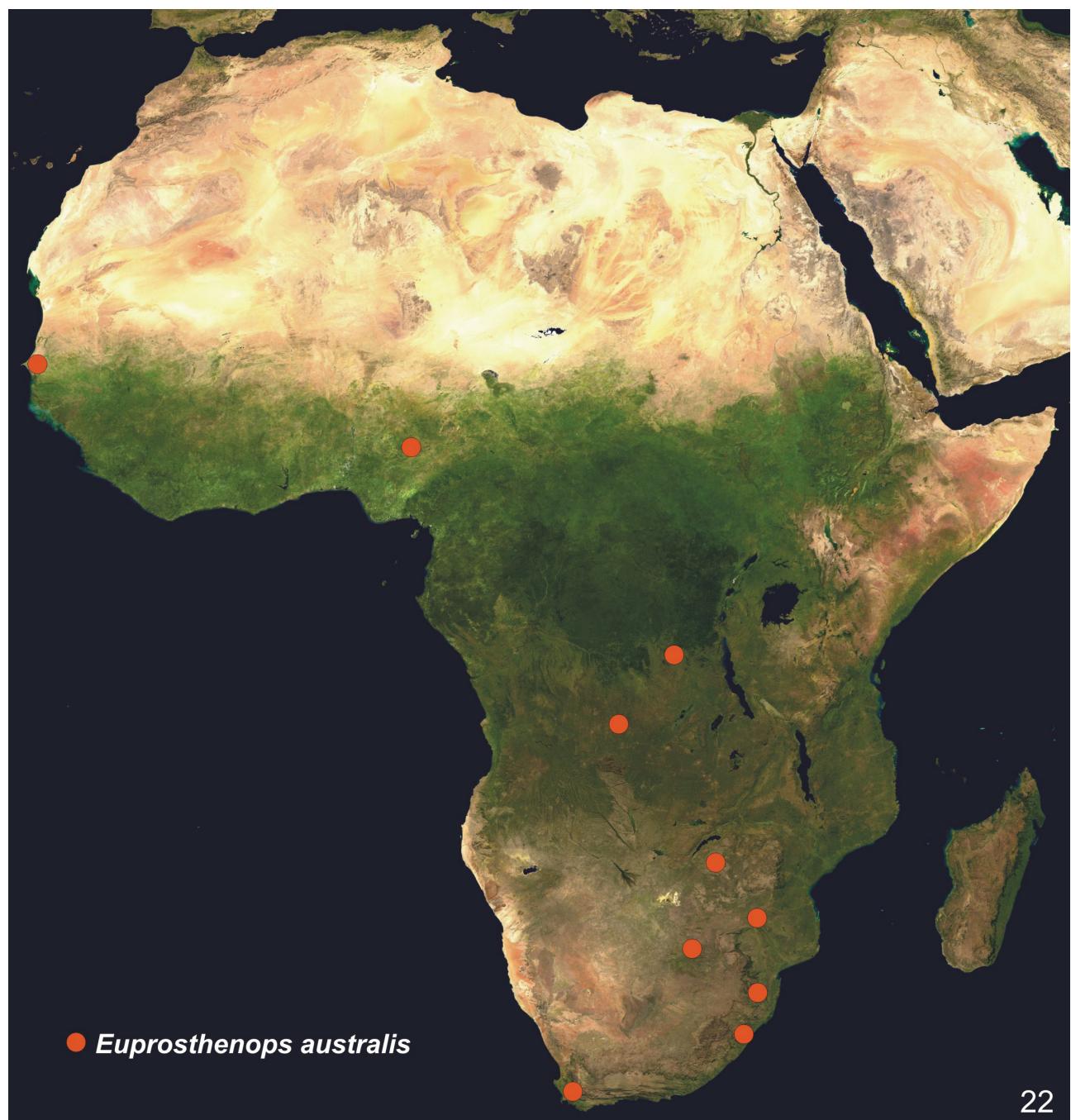


FIGURE 22. Distribution of *Euprosthenops australis* Simon, 1898 in Africa.

***Euprostenopsis* Blandin, 1974**

Figs 2, 23–35

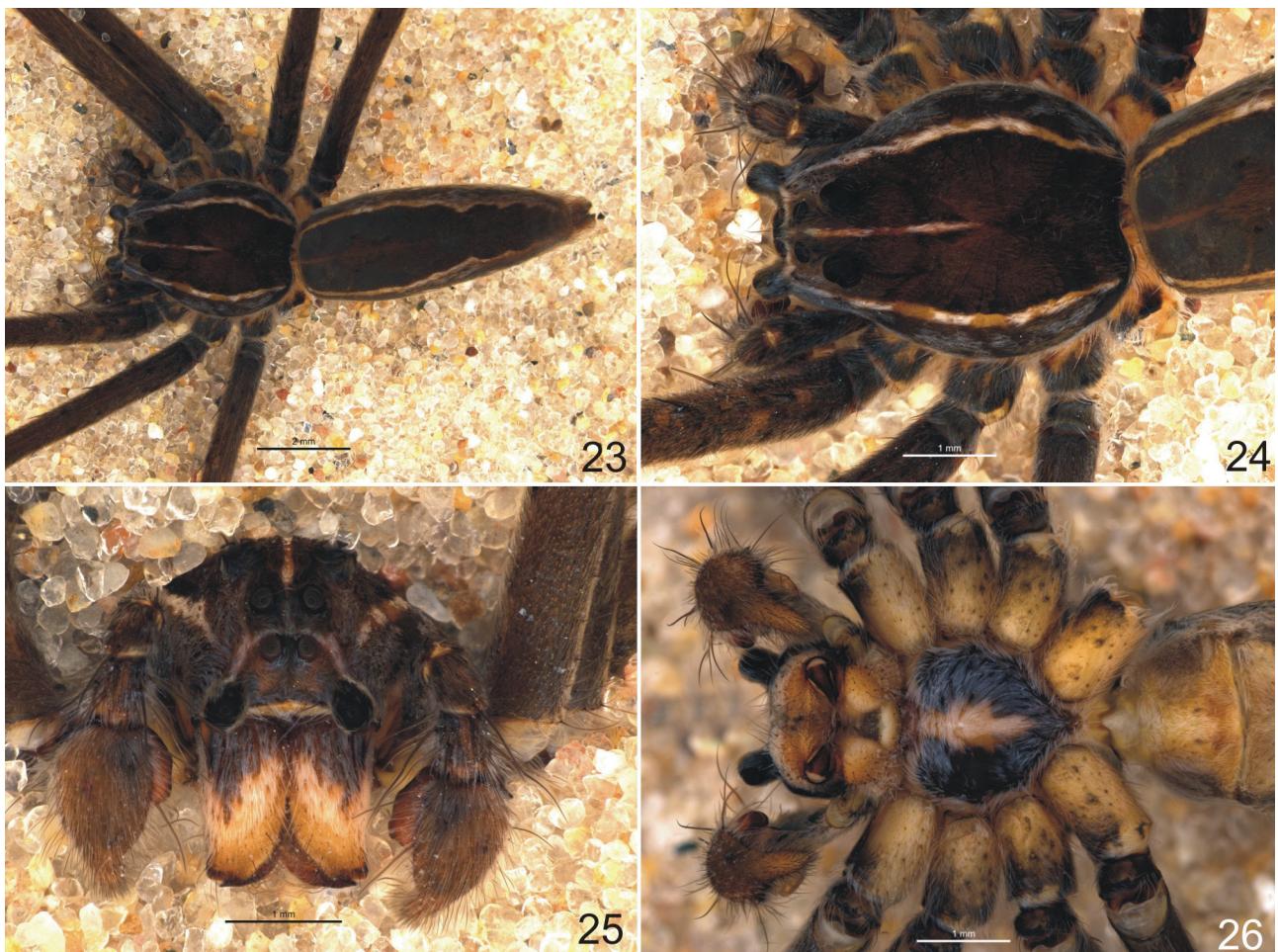
Euprostenopsis Blandin 1974: 945; Platnick 2014.

Type-species. *Euprostenops armatus* Strand, 1913, by original designation.

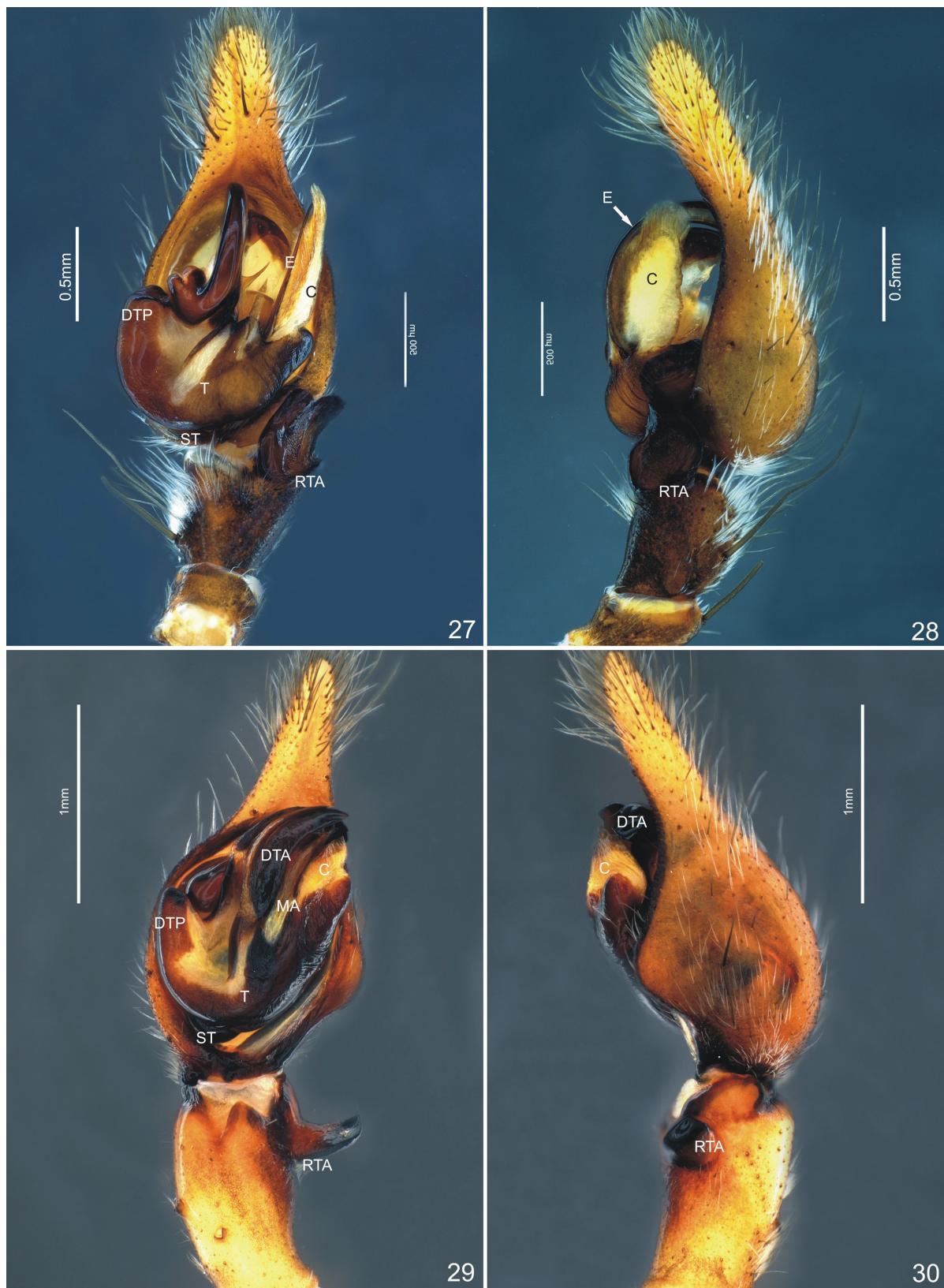
Diagnosis. The representatives of *Euprostenopsis* Blandin, 1974 resemble those of *Euprostenops* Pocock, 1897 in the following characters: foraging on a sheet web (Fig. 2), anterior eye row extremely procurved (forming almost two eye rows) and anterior lateral eye strongly projected (Figs 24, 25) but they can be differentiated by the position in the web, since *Euprostenops* moves under the web (Fig. 1) and *Euprostenopsis* moves on the surface of the sheet web (Fig. 2). The male palpi of *Euprostenopsis* possess a short and rounded distal tegular apophysis (DTA) (Figs 27, 32) and a concave retrolateral tibial apophysis (RTA) (Figs 28, 34). In contrast, males of *Euprostenops* possess a large and flattened distal tegular apophysis (DTA) (Fig. 15) and a finger-like retrolateral tibial apophysis (RTA) (Fig. 17). Females of *Euprostenopsis* resemble those of *Euprostenops* by the presence of conspicuous lateral lobes (LL) (Blandin 1974: 938, fig. 4) and by the scape-like projection of the middle field (MF) (Blandin 1974: 938, fig. 4), but can be distinguished from *Euprostenops* by the slightly elongated spermathecae (Blandin 1974: 939, fig. 5) and by the tubular and elongated copulatory ducts (CD) in the latter (Blandin 1974: 939, fig. 5).

***Euprostenopsis pulchella* (Pocock, 1902)**

Figs 2, 23–26, 27, 28, 31–35



FIGURES 23–26. *Euprostenopsis pulchella* (Pocock, 1902) (NCA 2010/2037), male habitus (23 ventral, 24 detail of ocular region, 25 frontal, 26 ventral).



FIGURES 27–30. *Euprosthenopsis* spp. 27, 28 *Euprosthenopsis pulchella* (Pocock, 1902) (NCA 2010/2037), male palpus (27 ventral, 28 retrolateral). 29, 30 *Euprosthenopsis armata* (Strand, 1913) (South Africa, 1 ♂, 20.XII.2013, H. Davel (FMNH 129283)), male palpus (29 ventral, 30 retrolateral). (C = conductor, DTA = distal tegular apophysis, DTP = distal tegular projection, E = embolus, MA = median apophysis, RTA = retrolateral tibial apophysis, ST = subtegulum, T = tegulum).



FIGURES 31–34. *Euprosthenopsis pulchella* (Pocock, 1902) (NCA 2010/2037). 31–34 male palpus (31 ventral, 32 detail of bulbous, 33 retrolateral, 34 detail of retrolateral tibial apophysis). (C = conductor, DTA = distal tegular apophysis, DTP = distal tegular projection, E = embolus, MA = median apophysis, RTA = retrolateral tibial apophysis, ST = subtegulum, T = tegulum).

Euprosthenops pulchellus Pocock 1902: 18, plate 3, fig. 6, female holotype from South Africa, Eastern Cape Province, Grahamstown (BMNH 01.3.13.194) (examined); Blandin 1977: 143, figs 9, 15, 19, 20b (transferred from *Euprosthenops*).

Euprosthenopsis pulchella (Pocock, 1902). Platnick 2014.

Note. Males and females were found together in several lots from South Africa (NCA collection).

Diagnosis. The males of *Euprosthenopsis pulchella* resemble those of *E. armata* by the short distal tegular projection (DTP, Figs 27, 29), by the short and membranous median apophysis (MA, Figs 27, 29), by the large and translucent conductor (C, Figs 27, 29) and by the concave retrolateral tibial apophysis (RTA, Figs 28, 30). Males of *E. pulchella* can be distinguished by the large and wide conductor (C, Figs 27, 31, 32), the long and thin embolus (E, Figs 27, 32), the elongated and slender distal tegular apophysis (DTA, Figs 27, 32) and the tooth-like projection at the base of the retrolateral tibial apophysis (RTA, Figs 28, 33, 34).

Description. Male (South Africa, NCA 2010/2037). Total length 11.67. Carapace 4.31 long, 3.65 wide, dark brown with a thin lateral white band (Figs 23, 24). Clypeus light brown, 0.50 high (Fig. 25). Anterior eye row extremely procurved, 1.60 wide (Fig. 25); posterior eye row strongly recurved, 1.38 wide (Fig. 24). Eye diameters, interdistances, and median ocular quadrangle: AME 0.18, ALE 0.21, PME 0.24, PLE 0.22; AME-AME 0.16, AME-ALE 0.64, PME-PME 0.36, PME-PLE 0.44, OQA 0.56, OQP 0.74, OQH 0.64. Chelicerae dark brown, with scattered white bristles anteriorly (Fig. 25). Retromargin of left cheliceral fang furrow with three teeth, equidistant and equal in size; promargin with three teeth, median tooth largest. Sternum dark brown with a median irregular light brown band, bristly; 2.07 long, 1.91 wide (Fig. 26). Labium light brown, dark brown laterally, 0.35 long, 0.70 wide (Fig. 26). Legs dark brown, relative length: IV-II-I-III, I – femur 7.80/ tibia-patella 9.79/ metatarsus 7.80/ tarsus 3.65/ total 29.04; II – 8.13/ 9.46/ 7.96/ 3.81/ 29.36; III – 7.30/ 8.13/ 6.30/ 3.15/ 24.88; IV – 9.13/ 10.12/ 10.95/ 3.32/ 33.52. Ventral pairs of macrosetae on tibiae: I-4; II-4; III-4; IV-4. Abdomen 6.64 long, dark brown with a lateral patch of white bristles forming two paramedian white bands (Fig. 23). Venter brown with a thin light brown band. Palpus with a short and rounded distal tegular apophysis (DTA) (Figs 27, 31, 32). Cymbium 2.34 long. Median apophysis (MA) short, slender and membranous (Figs 27, 31, 32). Conductor large, wide and translucent (Figs 27, 31, 32). Retrolateral tibial apophysis concave, with a small tooth-like projection at the base (Figs 28, 33, 34).

Female. Redescribed by Blandin, 1977: 143, f. 9, 15, 19, 20b.

Other material examined. SOUTH AFRICA, Western Cape, Bontebok National Park [34°04'S, 20°27'E], 1 ♂, 23.XI.2009, E. le Roux (NCA 2010/2037), Gondwana Game Reserve, SE Herbertsdale [34°04'S, 21°53'E], 1 ♂, 03.I.2006, M. Burger (NCA 2010/2482), 1 ♂, 03.I.2006, M. Burger (NCA 2010/2481); Oudtshoorn [33°35'S, 22°12'E], 2 ♂, 3 ♀, 15.XI.2008, Z. van der Walt (NCA 2009/5893), Anysberg Nature Reserve [33°31'S, 20°45'E], 2 ♂, 23.IX.2005, C. Haddad & R. Lyle (NCA 2007/3957); Eastern Cape, Mkhambathi Nature Reserve [31°32'S, 29°58'E], 1 ♂, 29.I.2008, M. Hamer (NCA 2009/5760); Kimberley [28°41'S, 24°44'E], 1 ♀, no date, collector unknown (MRAC 147.833); KwaZulu-Natal [28°29'S, 30°52'E], 2 ♀, 1980, unknown collector (FMNH 103053, 103054); Port Alfred [33°35'S, 26°53'E], 1 ♂, unknown collector (FMNH 103055); Hartbeespoort, Grootplaas De Rust [25°46'S, 27°50'E], 1 ♀, 20.XII.2013, H. Davel (FMNH 129282). LESOTHO, Ha Liphapang village [30°33'S, 28°05'E], 1 ♂, 15.XI.2003, C. Haddad (NCA 2009/1011). SWAZILAND, Malolotja Nature Reserve [25°58'S, 31°07'E], 1 ♂, 20.I.1989, R. Harris (NCA 90/473).

Distribution. South Africa, Lesotho and Swaziland (Fig. 35).

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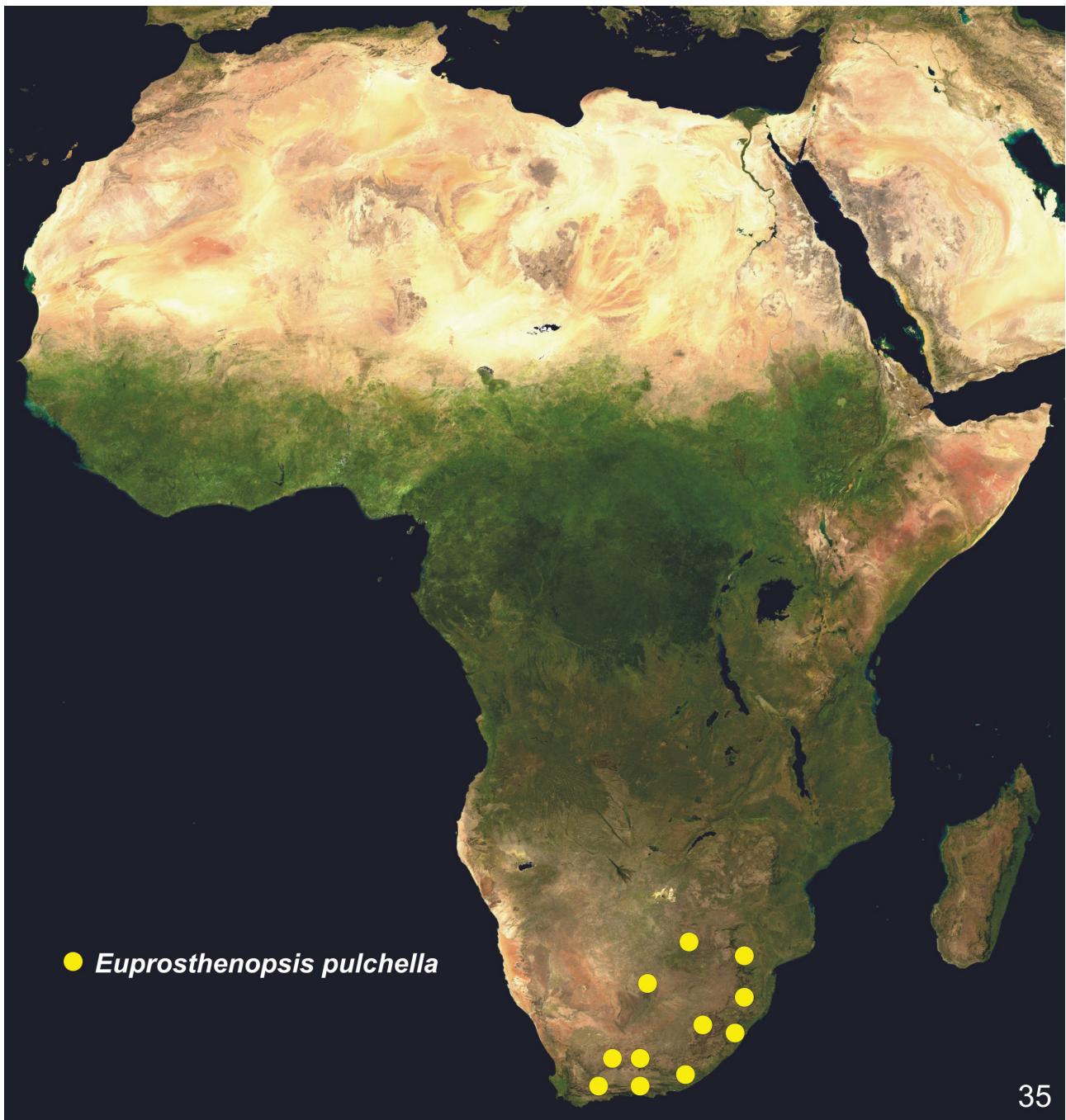


FIGURE 35. Distribution of *Euprosthenopsis pulchella* (Pocock, 1902) in Africa.

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